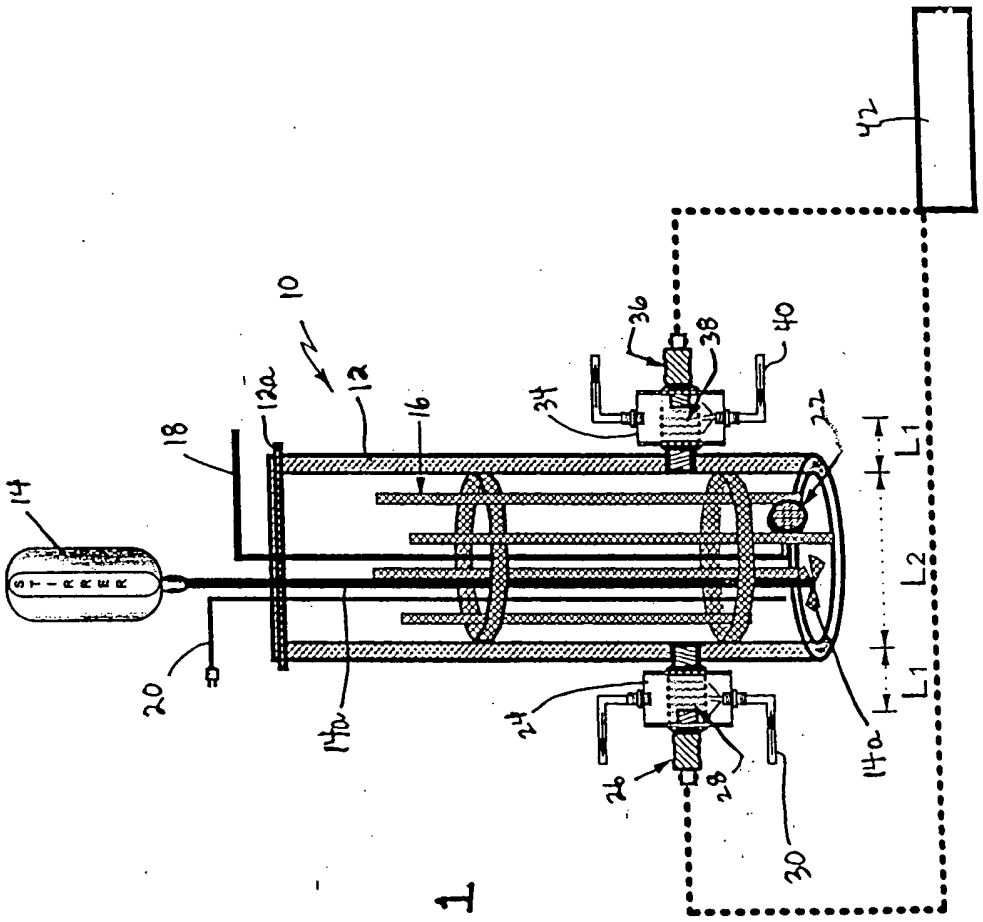

42
10
12
12a
16
18
14
STIRRER
20
14b
24
26
28
30
34
36
38
40
22
14a
L1
L2
L1

FIG. 1

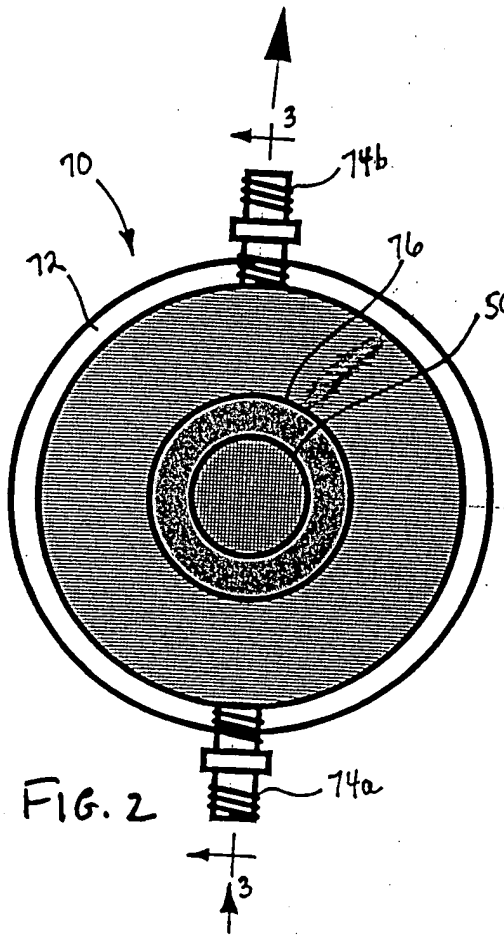

3
70
74b
72
76
50
74a
3

FIG. 2

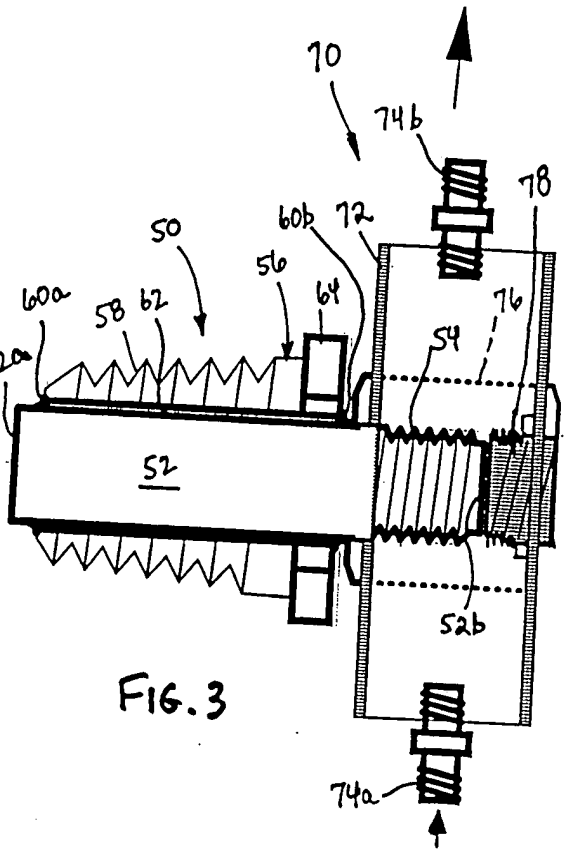

70
74b
78
50
60b
72
60a
58
62
56
64
76
54
52a
52
52b
74a

FIG. 3

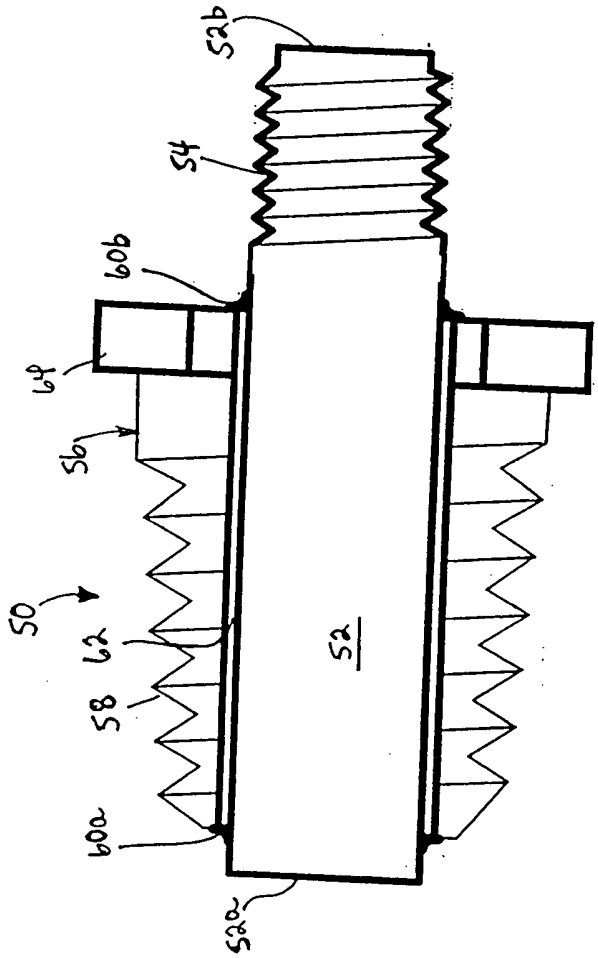


FIG. 4

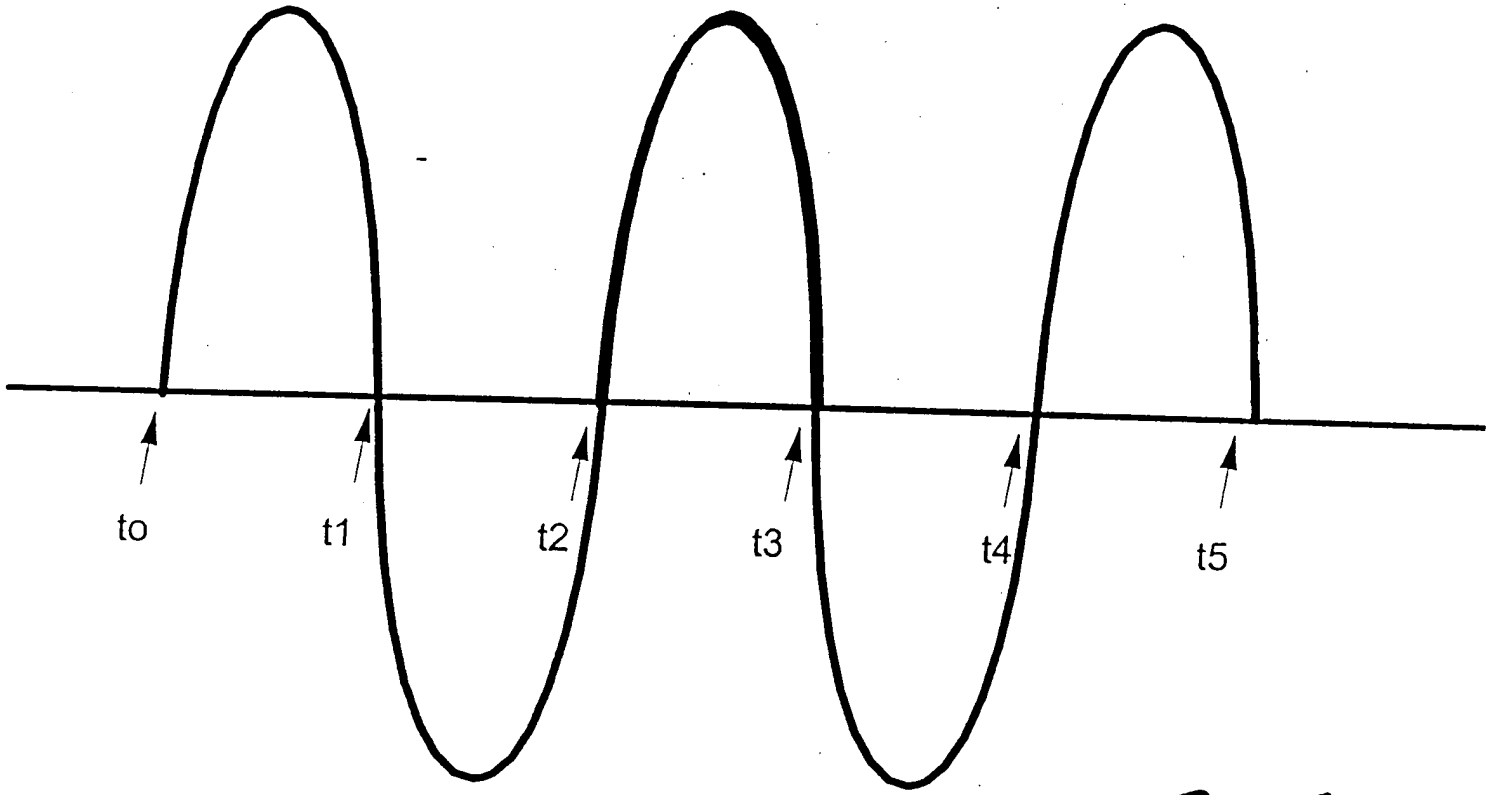


FIG. 5

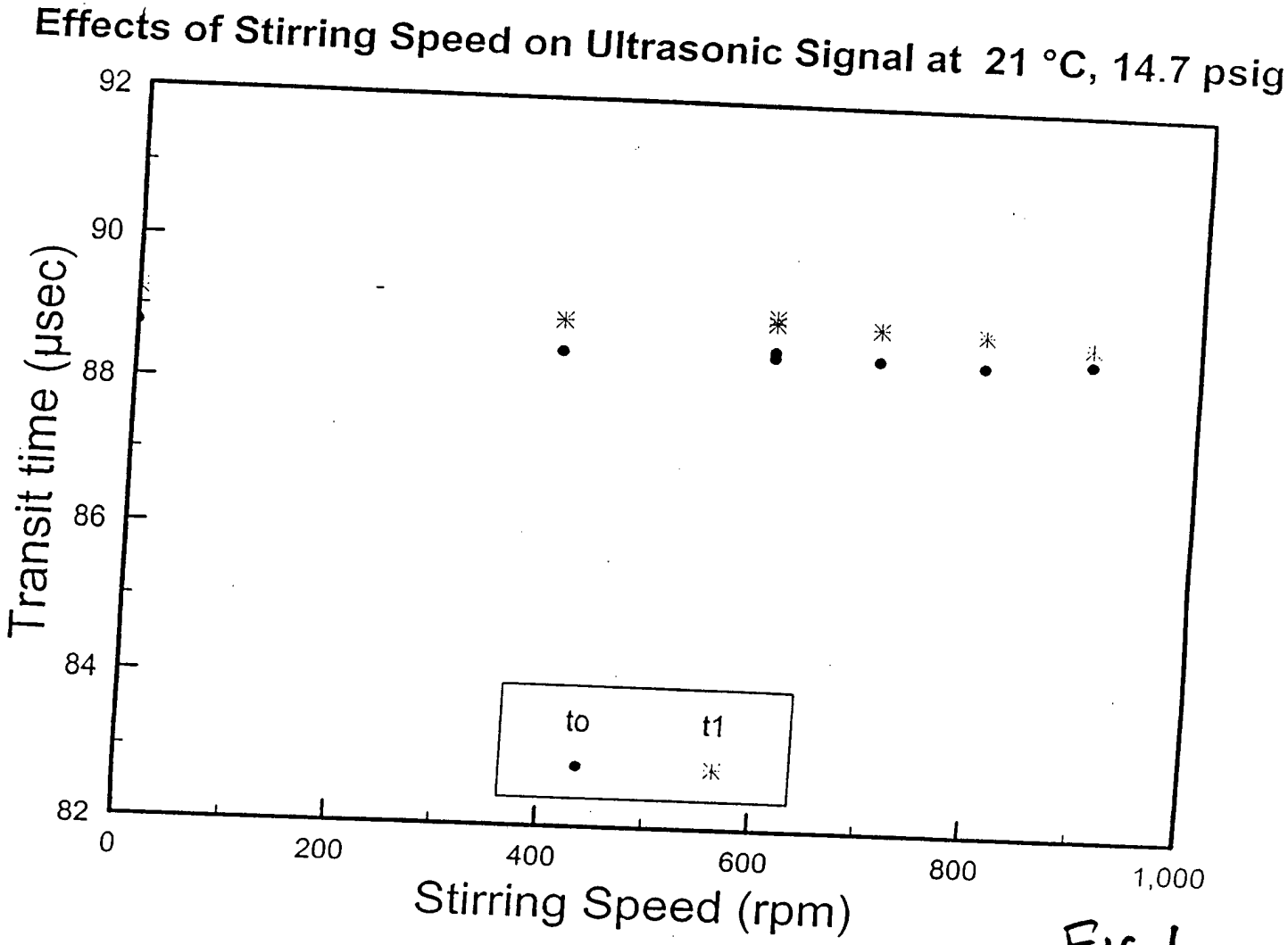

Effects of Stirring Speed on Ultrasonic Signal at 21 °C, 14.7 psig
Transit time (µsec)
92
90
88
86
84
82
0
200
400
600
800
1,000
Stirring Speed (rpm)
to
t1

FIG. 6

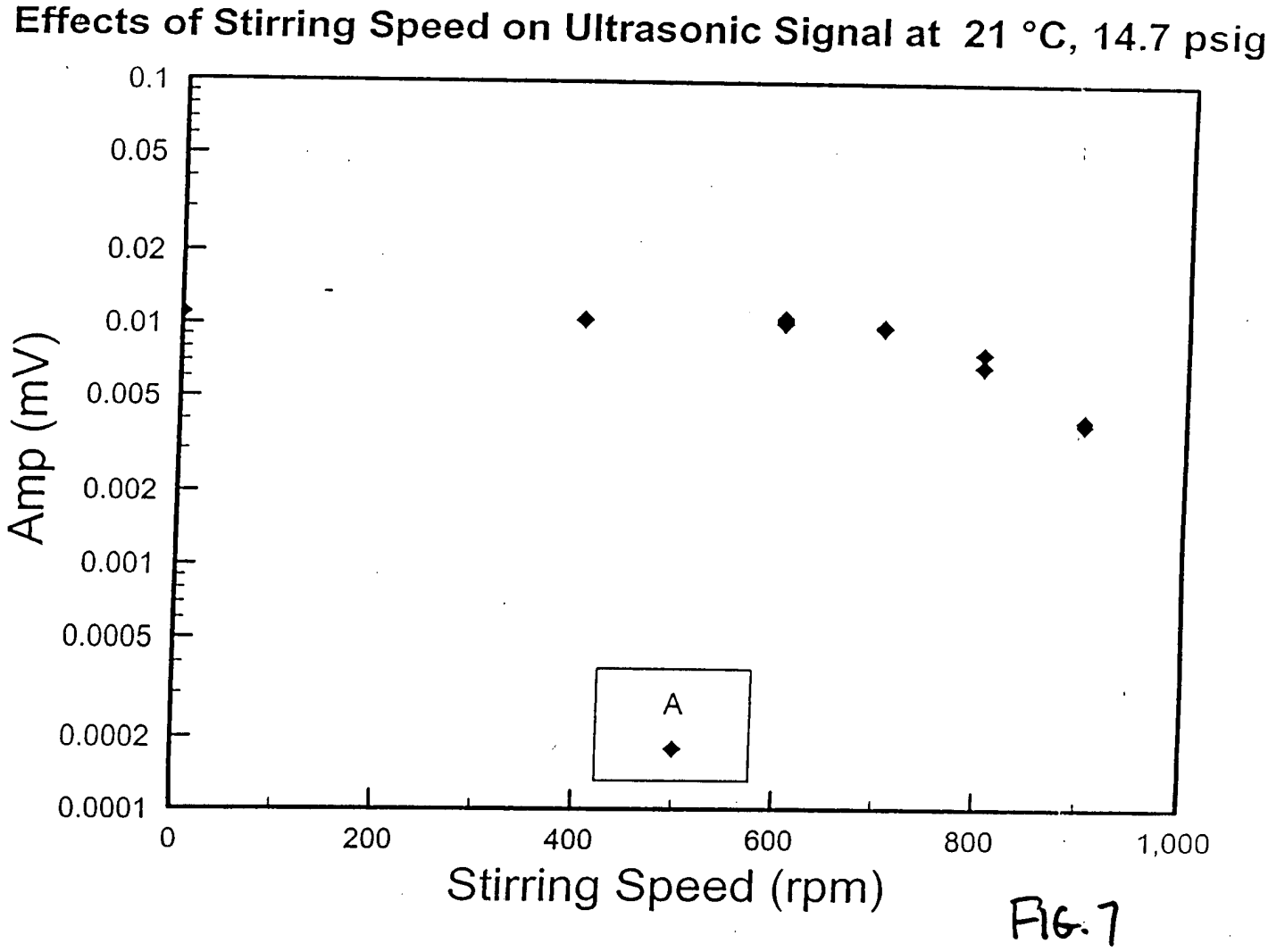

Effects of Stirring Speed on Ultrasonic Signal at 21 °C, 14.7 psig
0.1
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
Amp (mV)
A
0
200
400
600
800
1,000
Stirring Speed (rpm)

FIG. 7

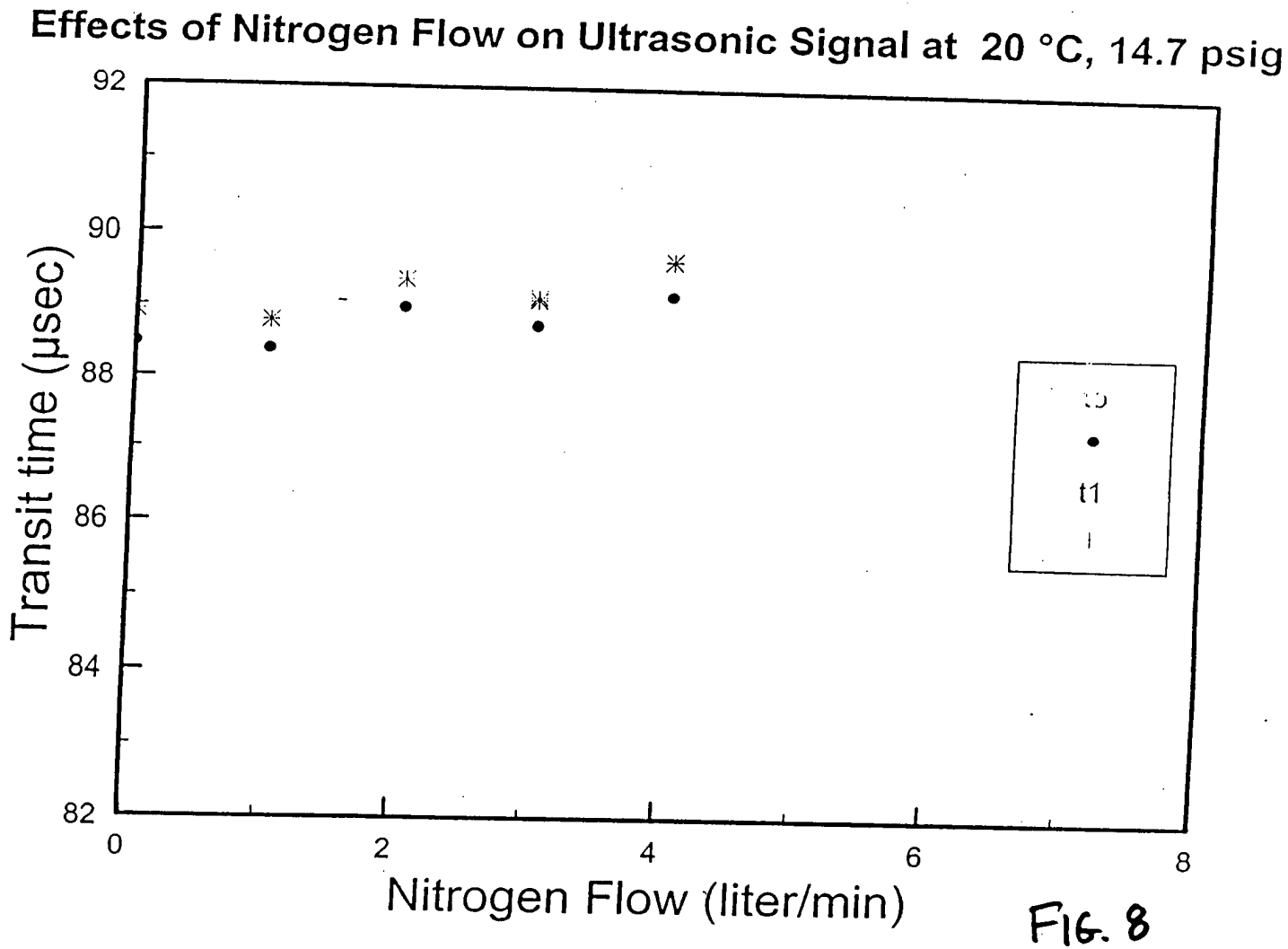

Effects of Nitrogen Flow on Ultrasonic Signal at 20 °C, 14.7 psig
92
90
88
86
84
82
Transit time (µsec)
0
2
4
6
8
Nitrogen Flow (liter/min)
t1

FIG. 8

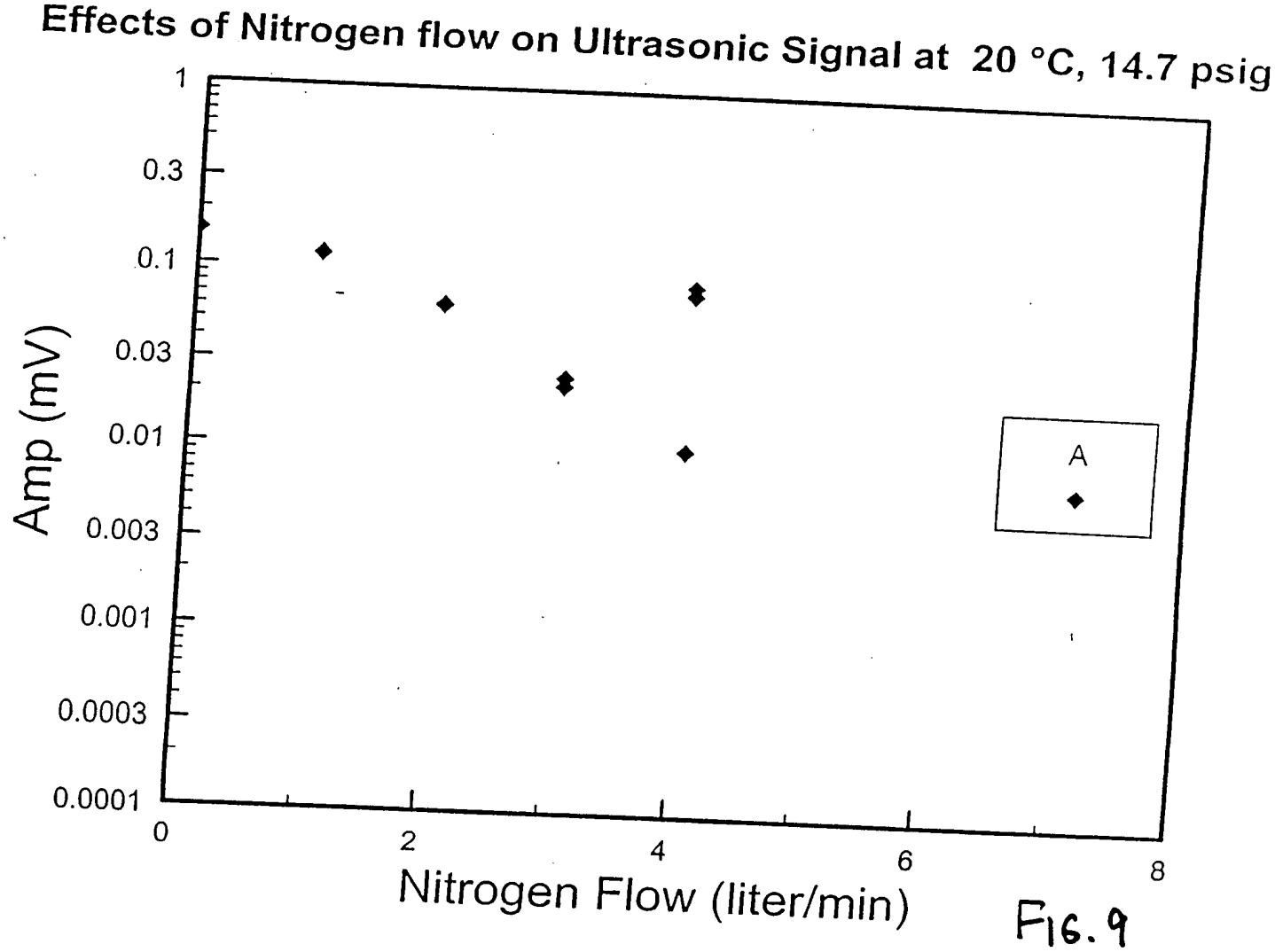

Effects of Nitrogen flow on Ultrasonic Signal at 20 °C, 14.7 psig
Amp (mV)
1
0.3
0.1
0.03
0.01
0.003
0.001
0.0003
0.0001
0
2
4
6
8
Nitrogen Flow (liter/min)
A

Fig. 9

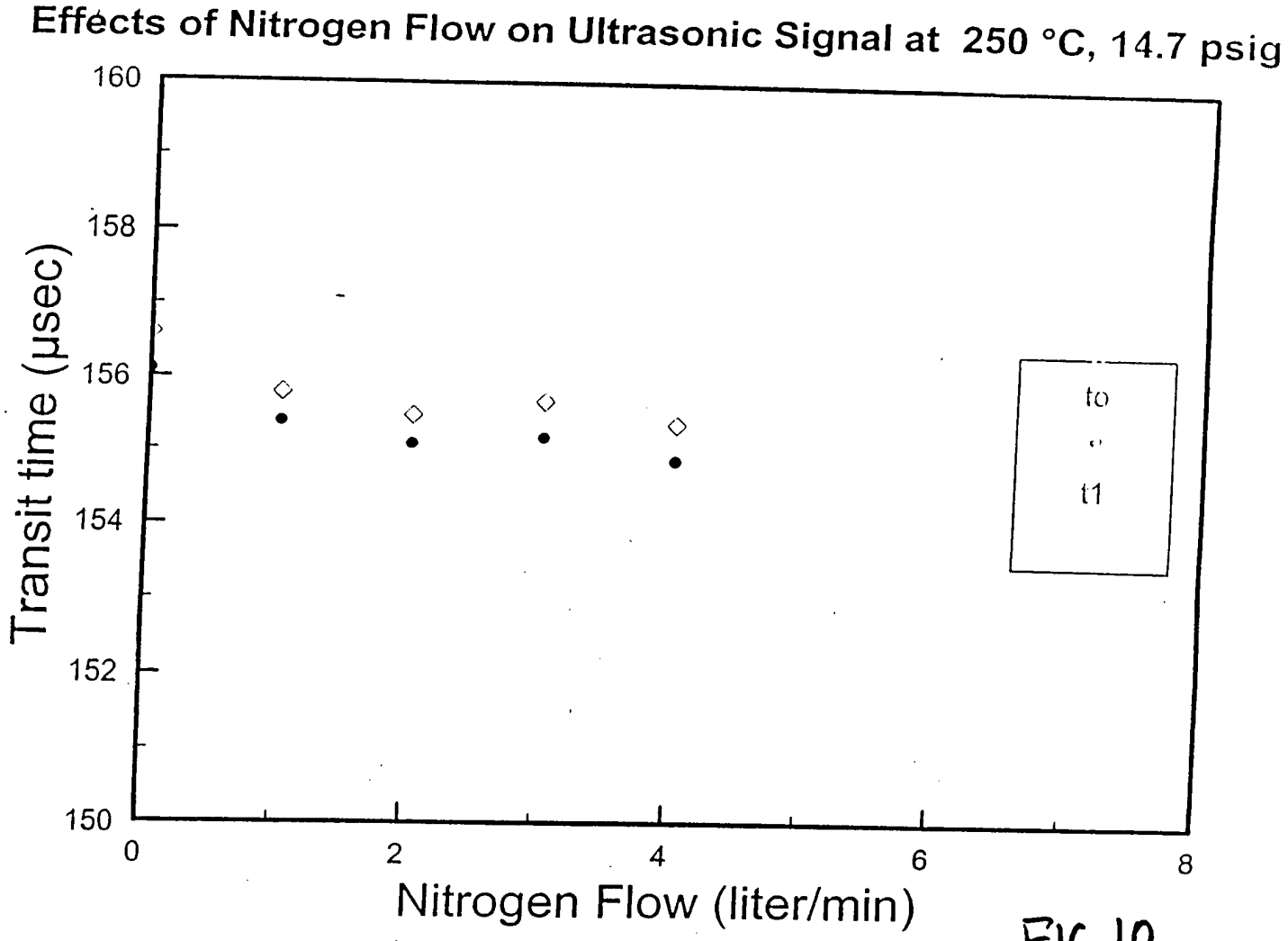

Effects of Nitrogen Flow on Ultrasonic Signal at 250 °C, 14.7 psig
160
158
156
154
152
150
Transit time (µsec)
0
2
4
6
8
Nitrogen Flow (liter/min)
to
t1

FIG. 10

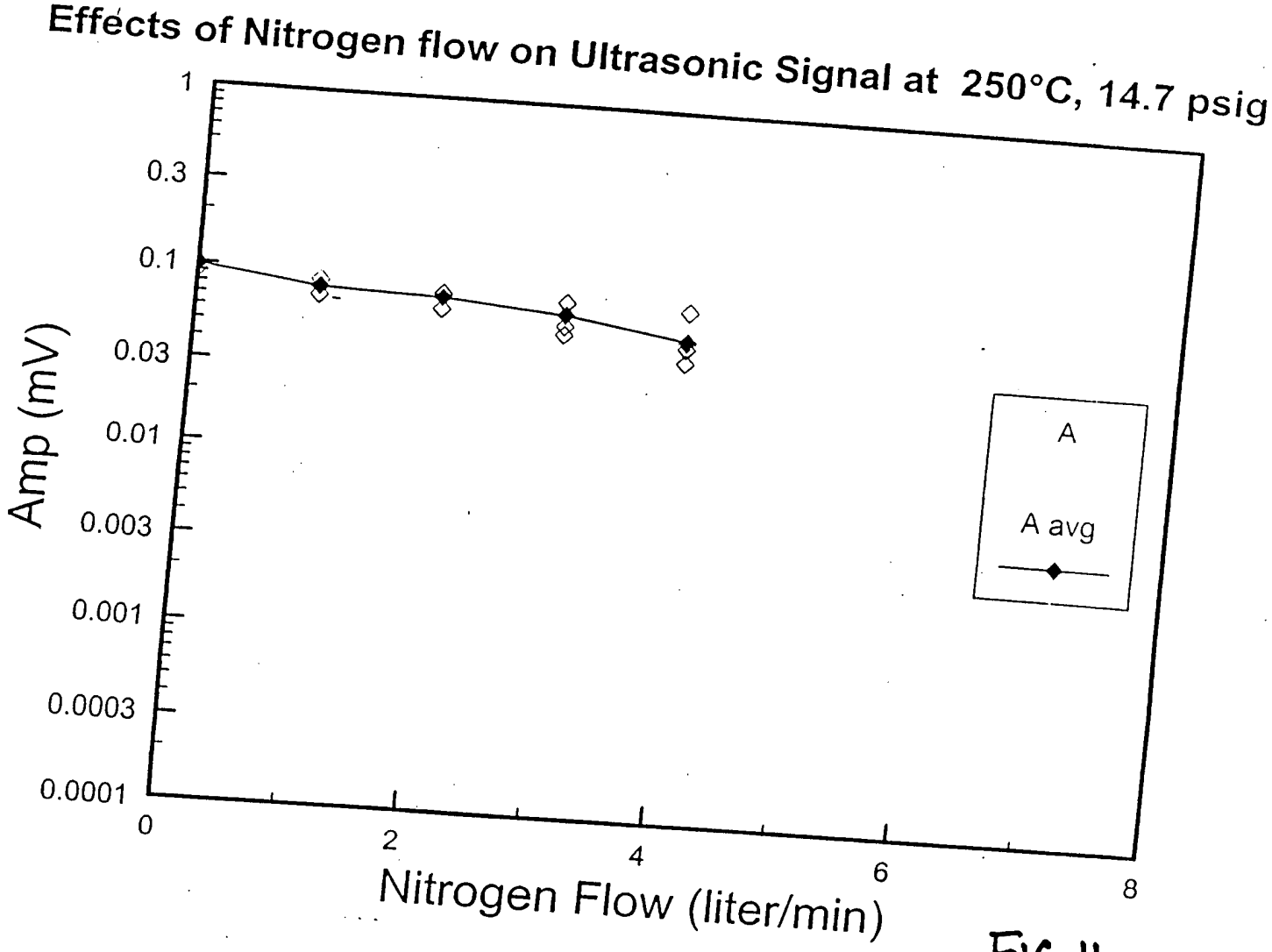

Effects of Nitrogen flow on Ultrasonic Signal at 250°C, 14.7 psig
Amp (mV)
1
0.3
0.1
0.03
0.01
0.003
0.001
0.0003
0.0001
0
2
4
6
8
Nitrogen Flow (liter/min)
A
A avg

Fig. 11

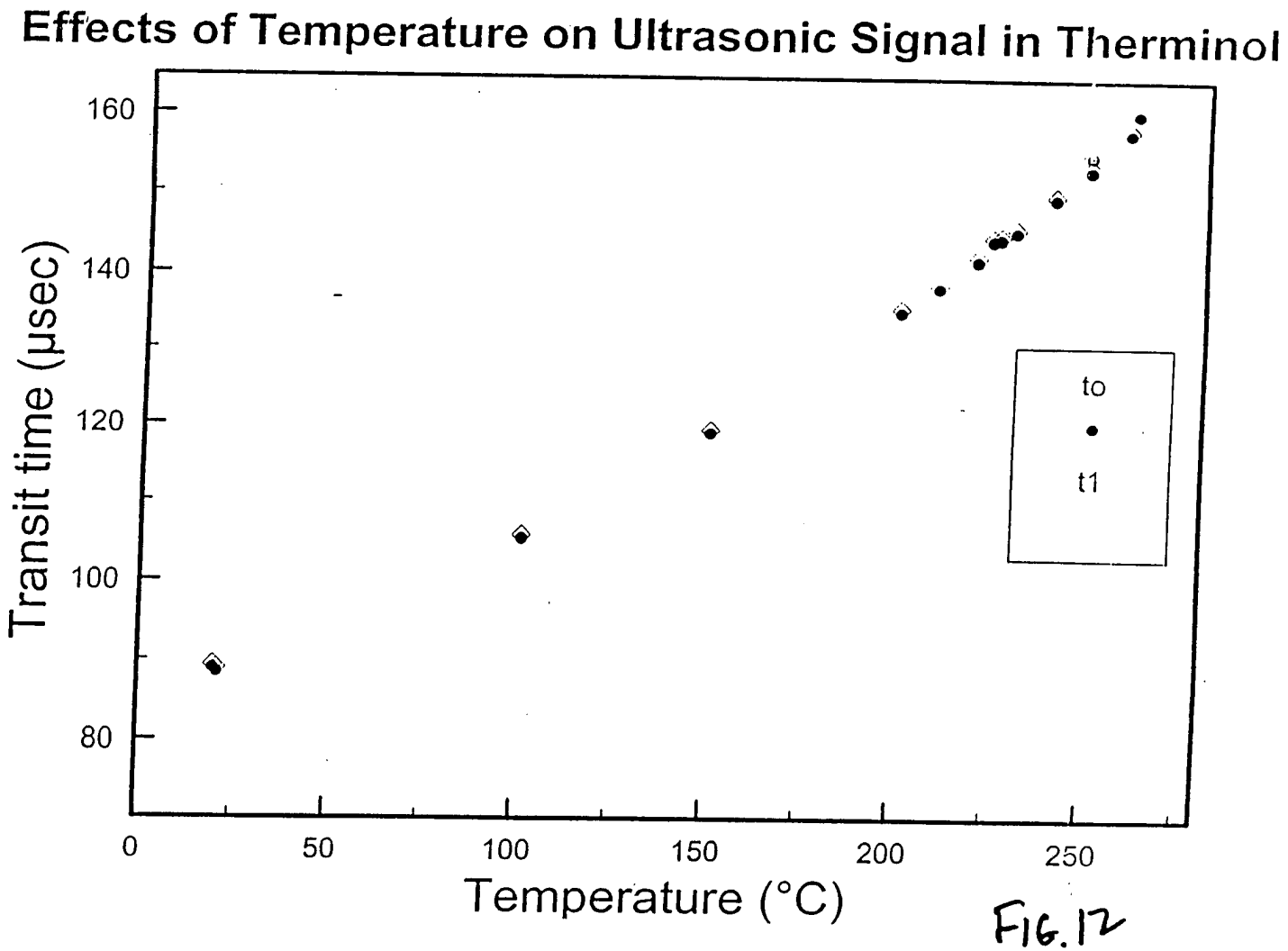

Effects of Temperature on Ultrasonic Signal in Therminol
Transit time (µsec)
160
140
120
100
80
0
50
100
150
200
250
Temperature (°C)
to
t1

Fig. 12

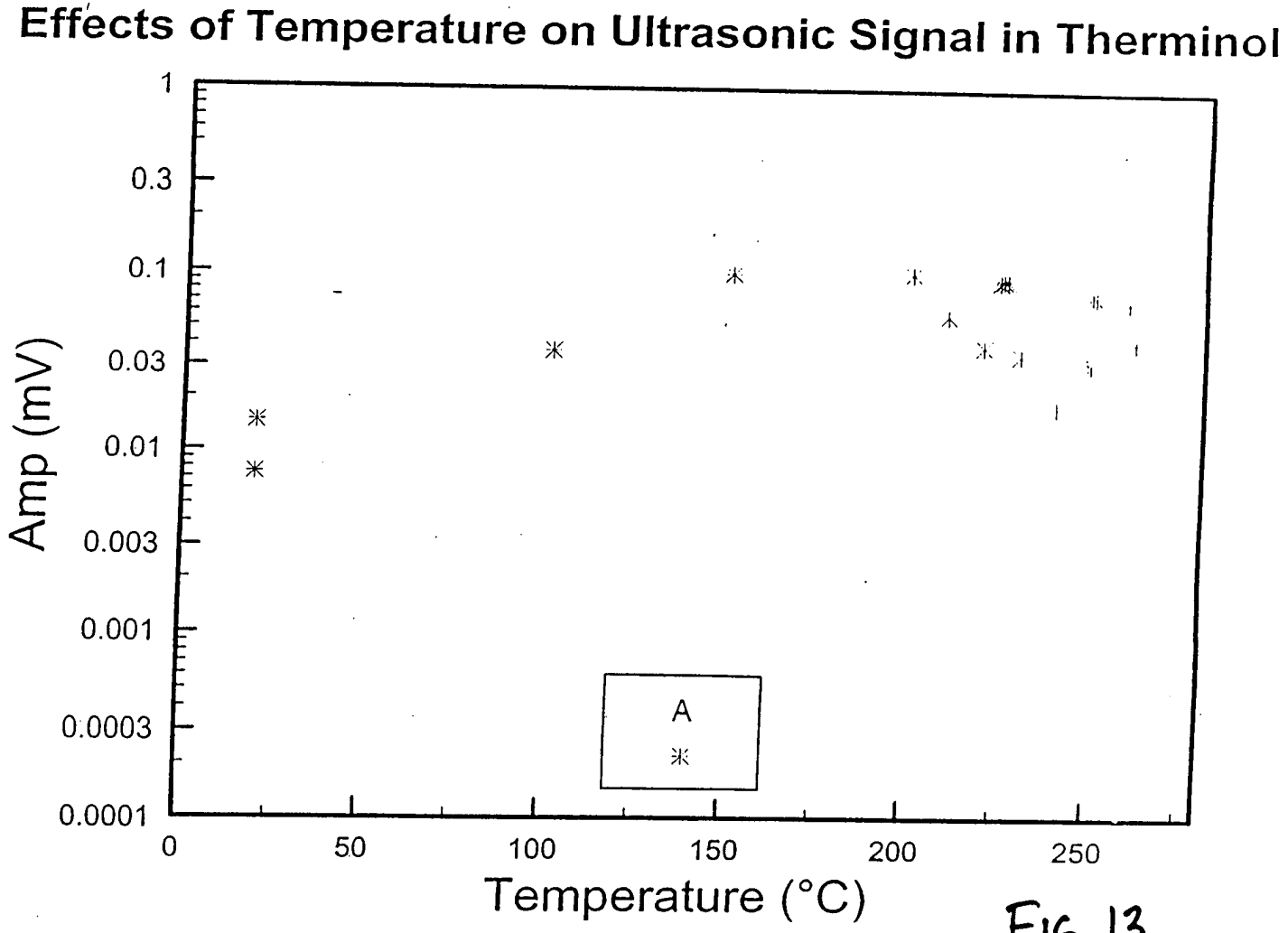

Effects of Temperature on Ultrasonic Signal in Therminol
Amp (mV)
1
0.3
0.1
0.03
0.01
0.003
0.001
0.0003
0.0001
0
50
100
150
200
250
Temperature (°C)
A

Fig. 13

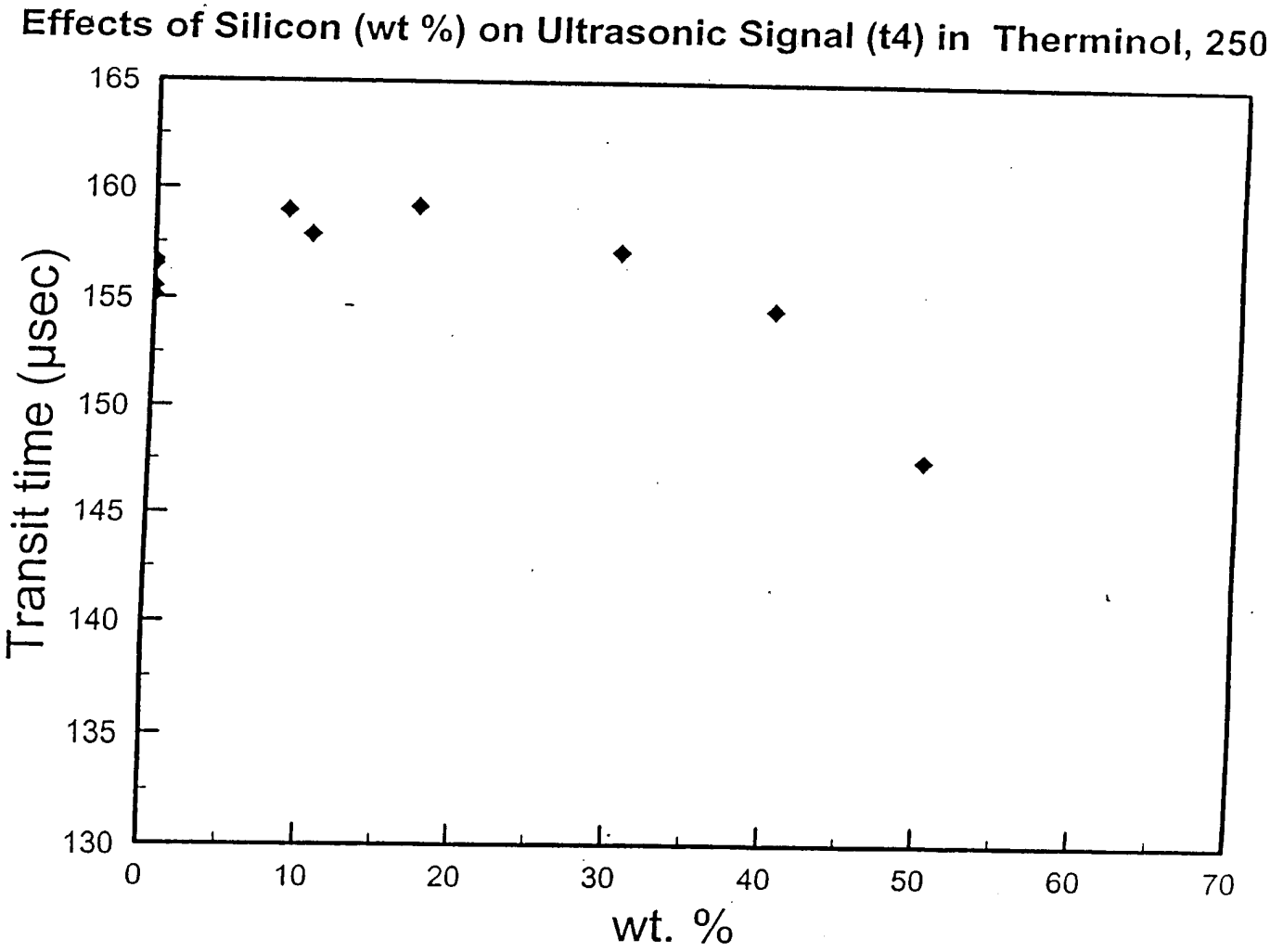

Effects of Silicon (wt %) on Ultrasonic Signal (t4) in Therminol, 250 C
Transit time (µsec)
165
160
155
150
145
140
135
130
0
10
20
30
40
50
60
70
wt. %

FIG. 14

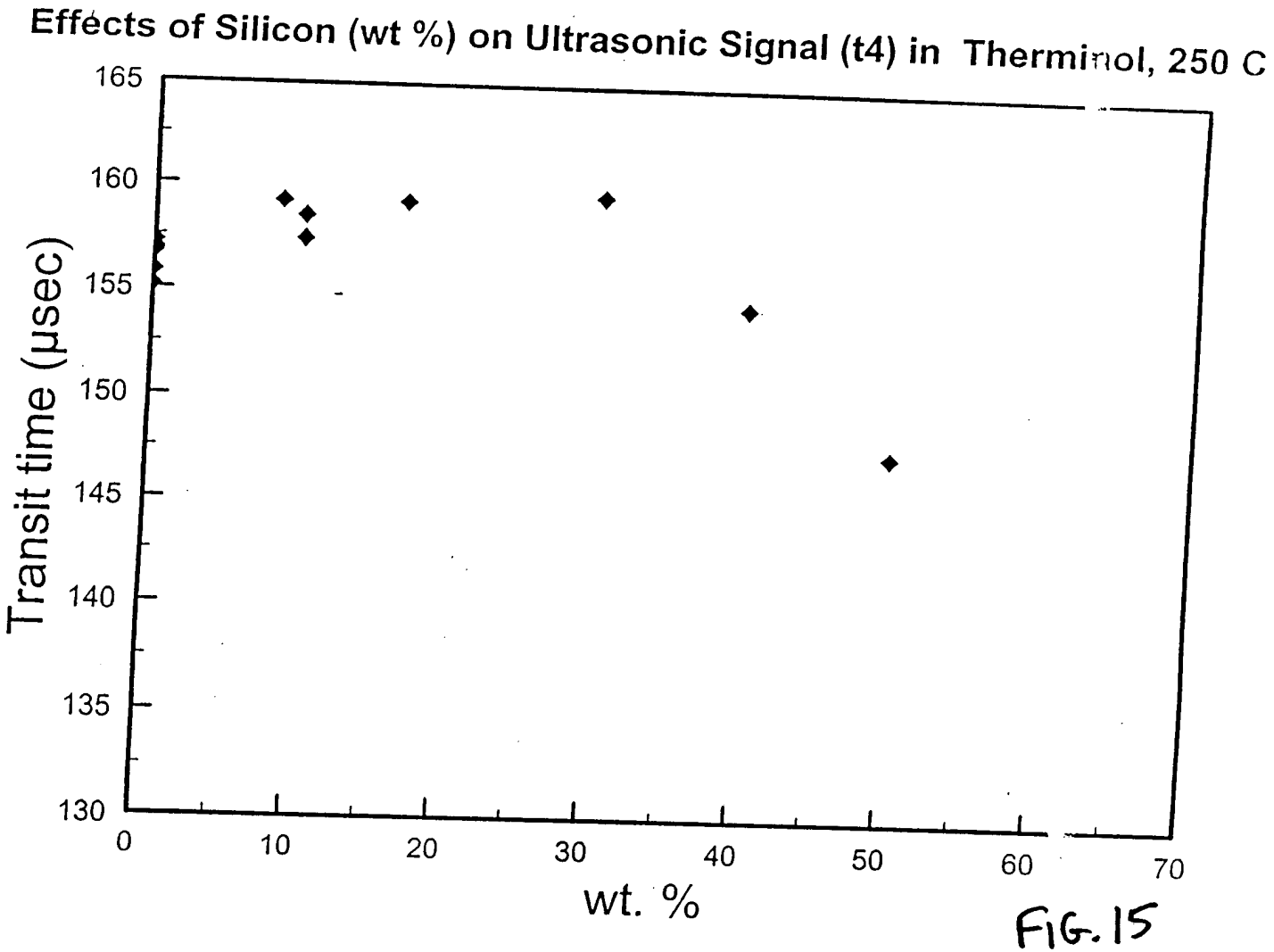

Effects of Silicon (wt %) on Ultrasonic Signal (t4) in Therminol, 250 C
Transit time (µsec)
165
160
155
150
145
140
135
130
0
10
20
30
40
50
60
70
wt. %

FIG. 15

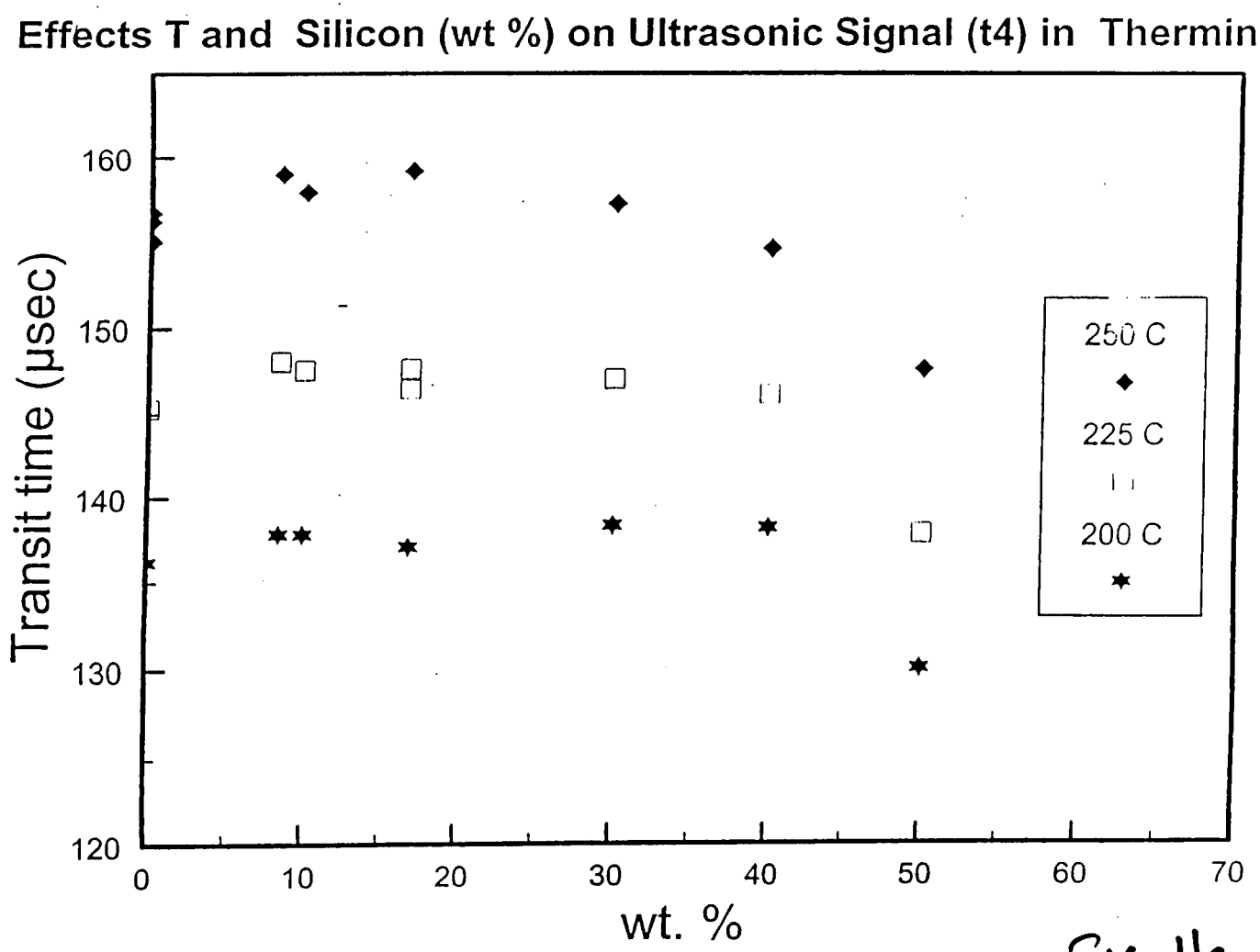

Effects T and Silicon (wt %) on Ultrasonic Signal (t4) in Therminol
Transit time (µsec)
160
150
140
130
120
0
10
20
30
40
50
60
70
wt. %
250 C
225 C
200 C

FIG. 16

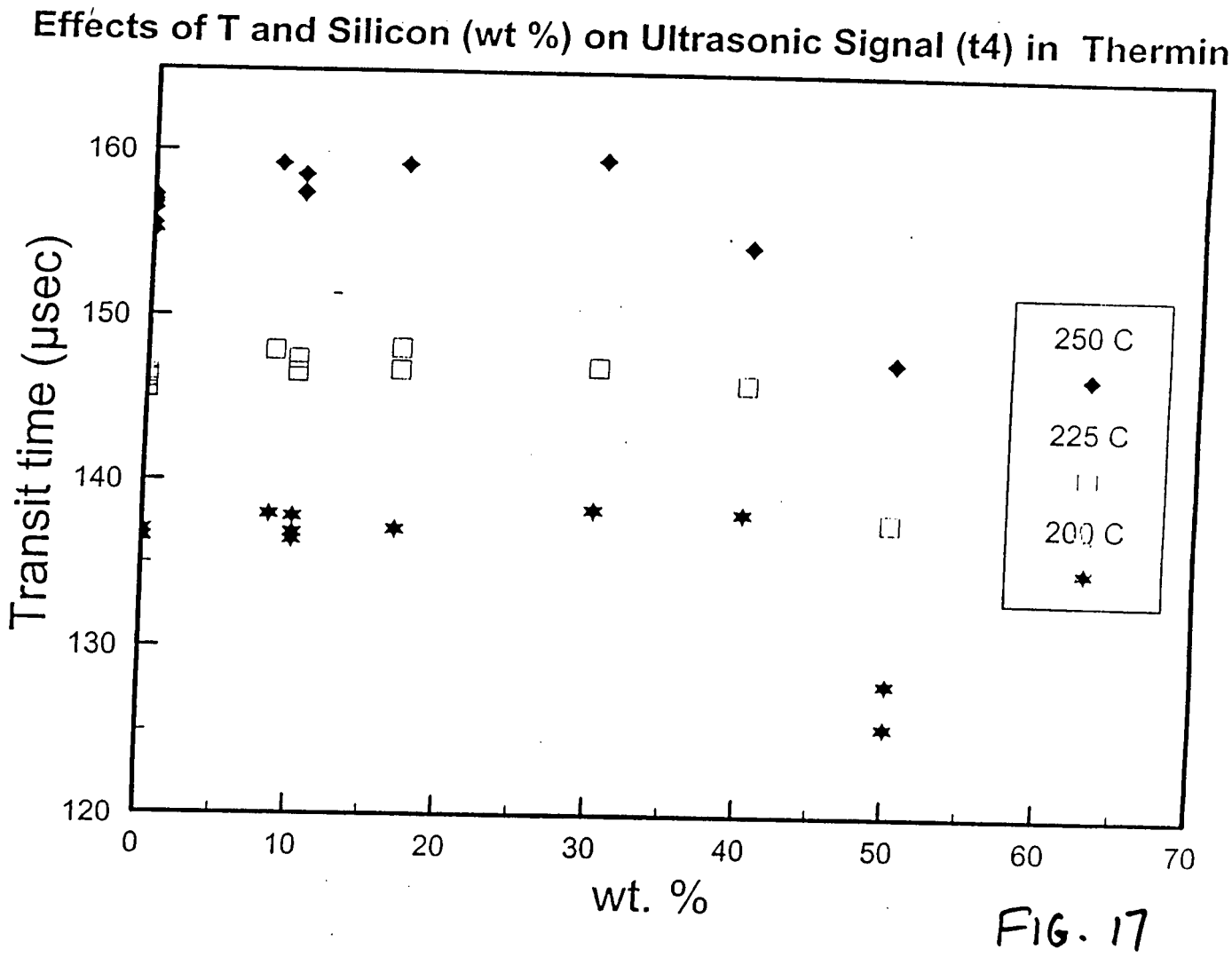

Effects of T and Silicon (wt %) on Ultrasonic Signal (t4) in Therminol
Transit time (µsec)
160
150
140
130
120
0
10
20
30
40
50
60
70
wt. %
250 C
225 C
200 C

FIG. 17

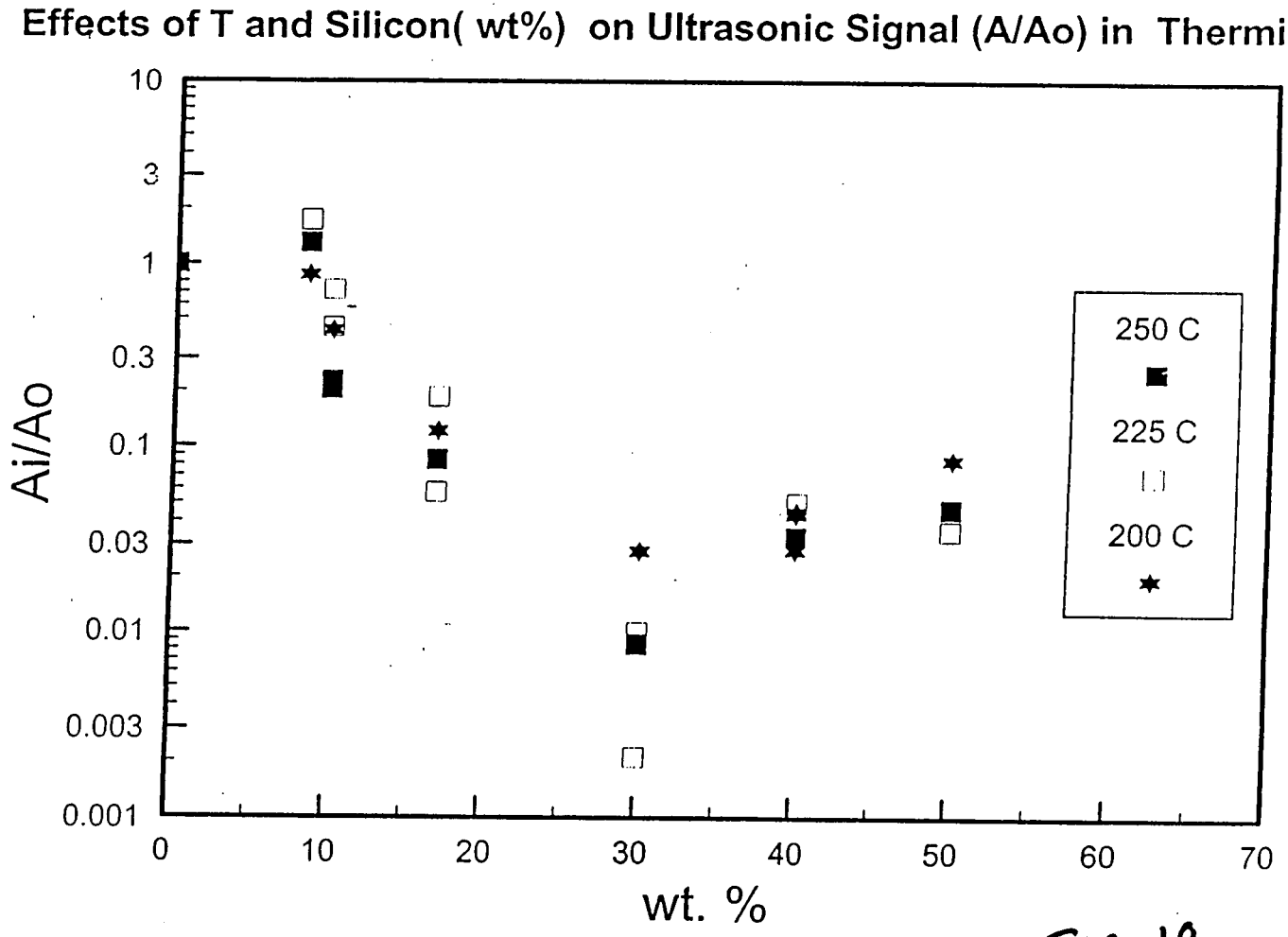
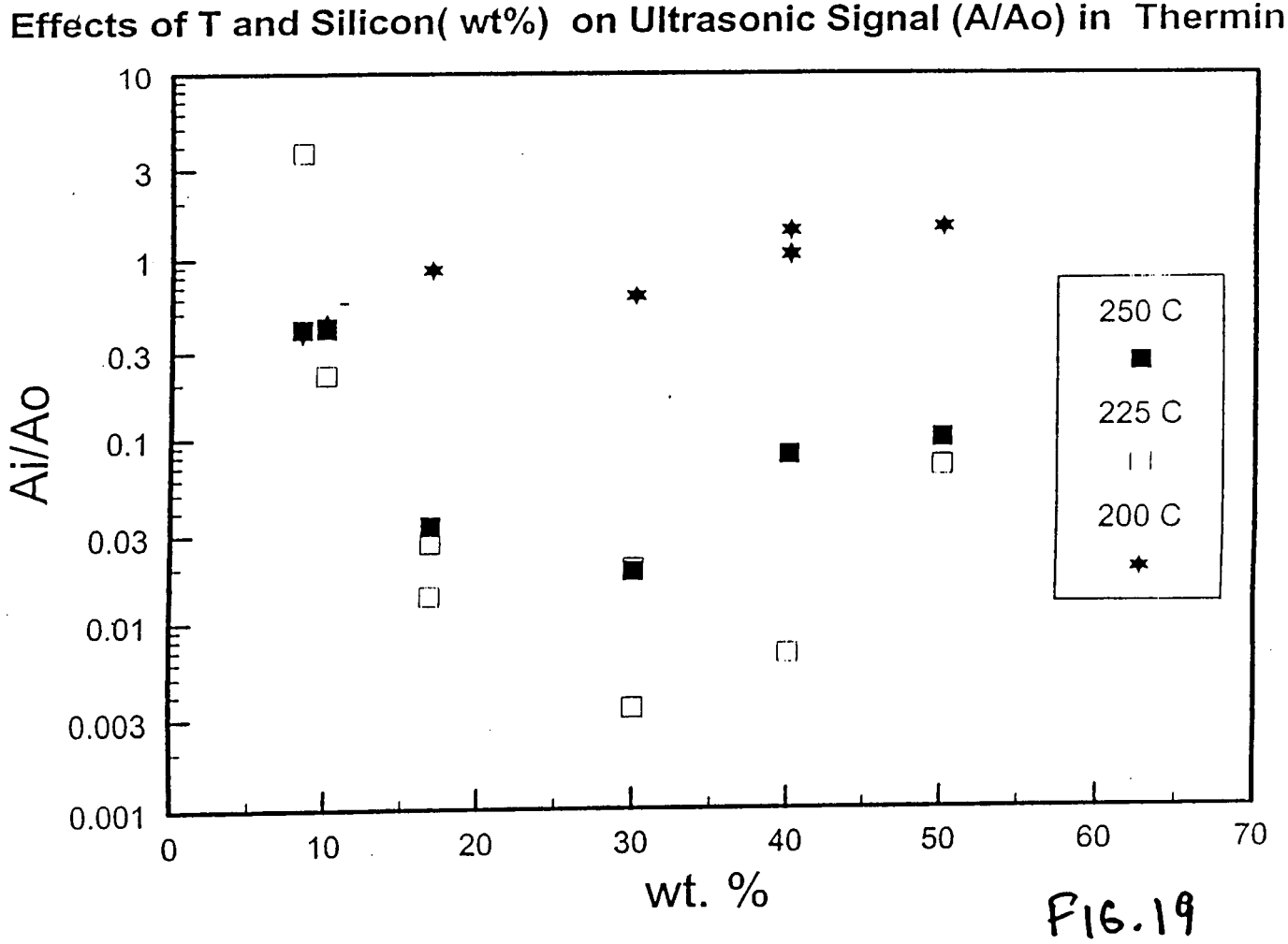

Effects of T and Silicon(wt%) on Ultrasonic Signal (A/Ao) in Therminol
Ai/Ao
10
3
1
0.3
0.1
0.03
0.01
0.003
0.001
0
10
20
30
40
50
60
70
wt. %
250 C
225 C
200 C

FIG. 18


Effects of T and Silicon(wt%) on Ultrasonic Signal (A/Ao) in Therminol
Ai/Ao
10
3
1
0.3
0.1
0.03
0.01
0.003
0.001
0
10
20
30
40
50
60
70
wt. %
250 C
225 C
200 C

F16.19

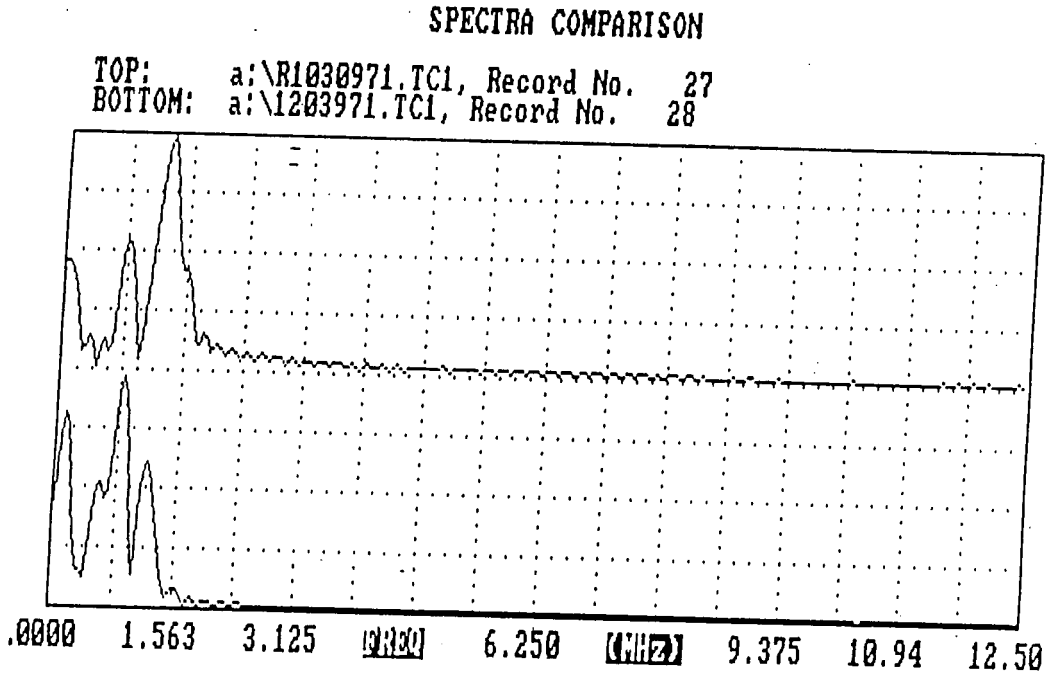

SPECTRA COMPARISON
TOP: a:\R1030971.TC1, Record No. 27
BOTTOM: a:\1203971.TC1, Record No. 28
.0000
1.563
3.125
6.250
9.375
10.94
12.50

FIG. 20

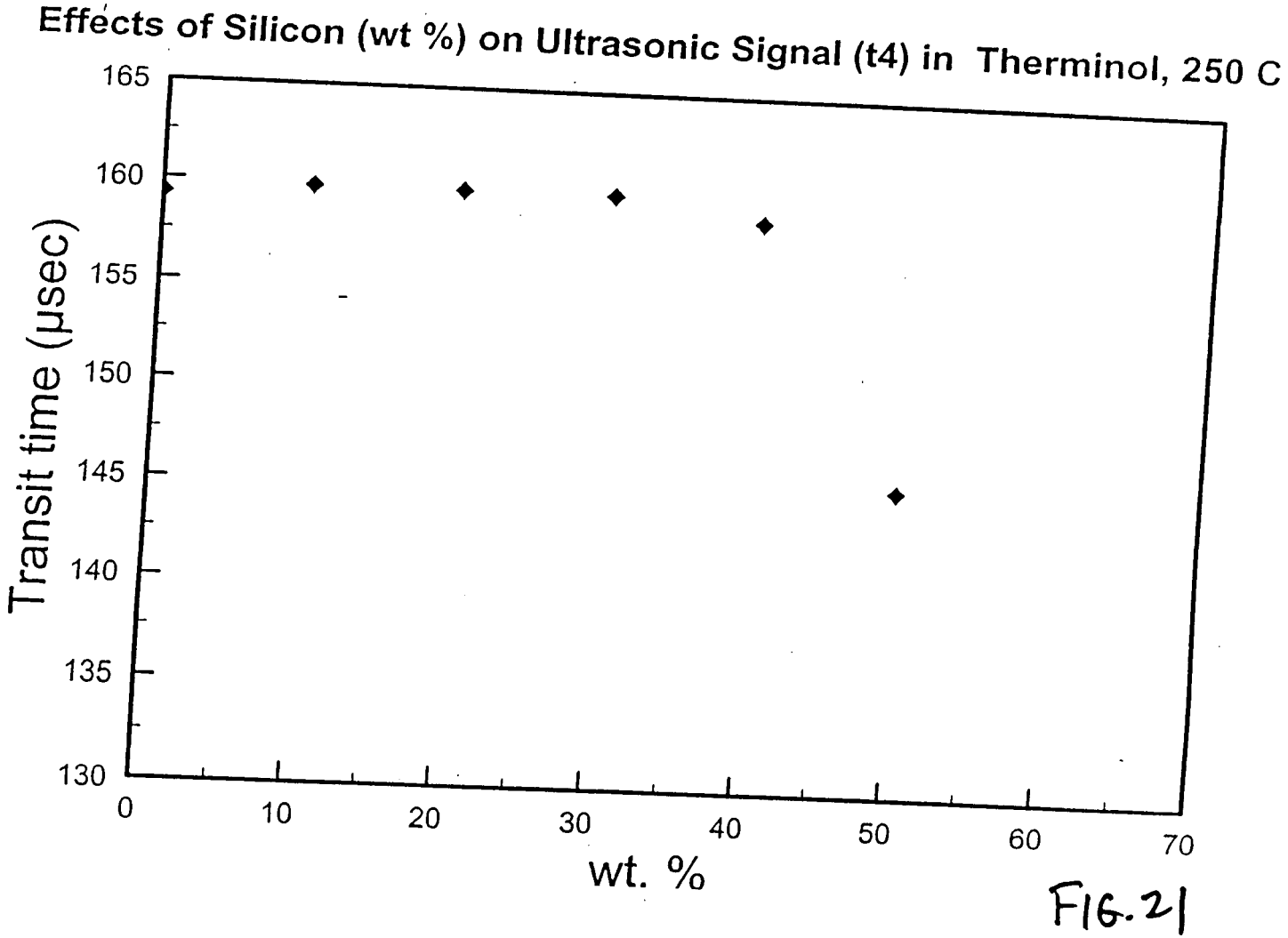

Effects of Silicon (wt %) on Ultrasonic Signal (t4) in Therminol, 250 C
Transit time (µsec)
165
160
155
150
145
140
135
130
0
10
20
30
40
50
60
70
wt. %

FIG. 21

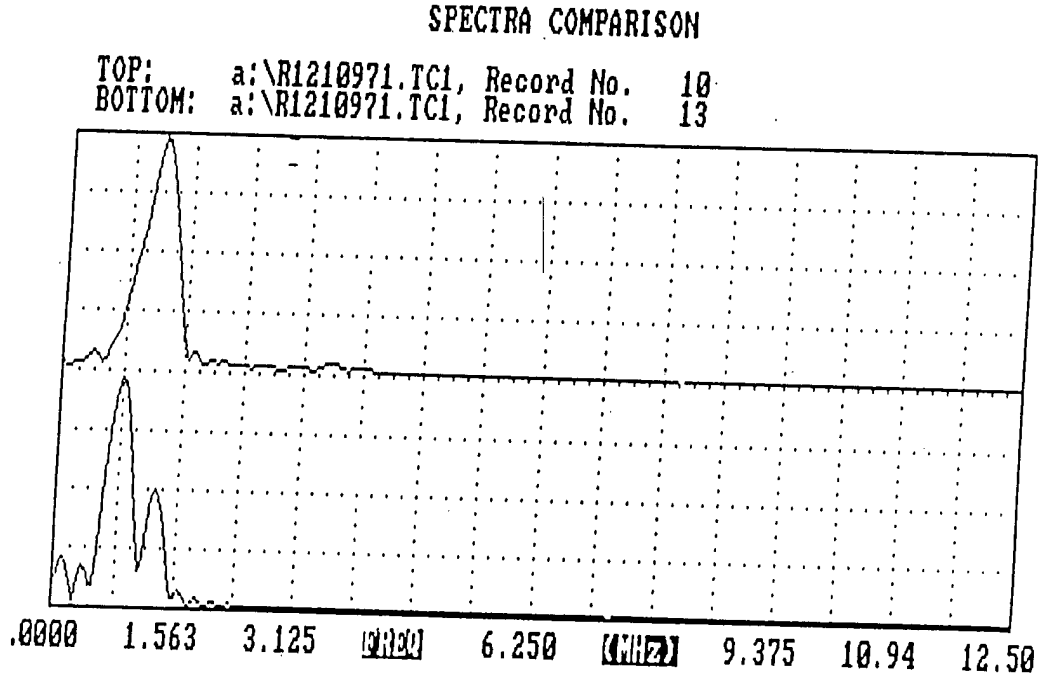

SPECTRA COMPARISON
TOP: a:\R1210971.TC1, Record No. 10
BOTTOM: a:\R1210971.TC1, Record No. 13
.0000
1.563
3.125
6.250
9.375
10.94
12.50

FIG. 22

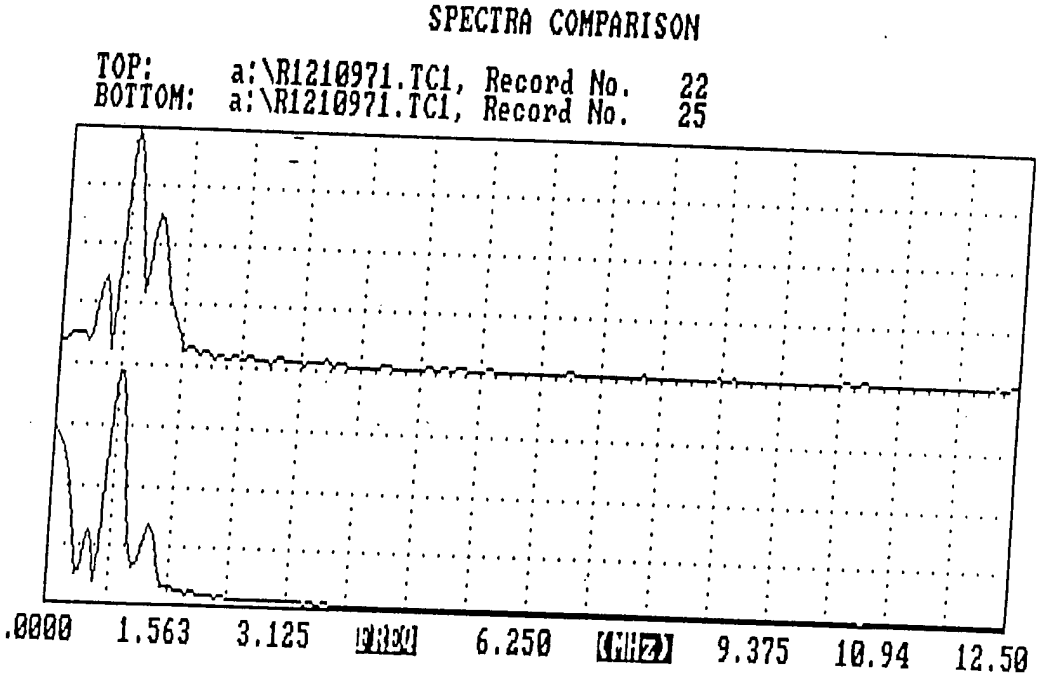

SPECTRA COMPARISON
TOP: a:\R1210971.TC1, Record No. 22
BOTTOM: a:\R1210971.TC1, Record No. 25
.0000
1.563
3.125
6.250
9.375
10.94
12.50

Fig. 23

FIG. 24a

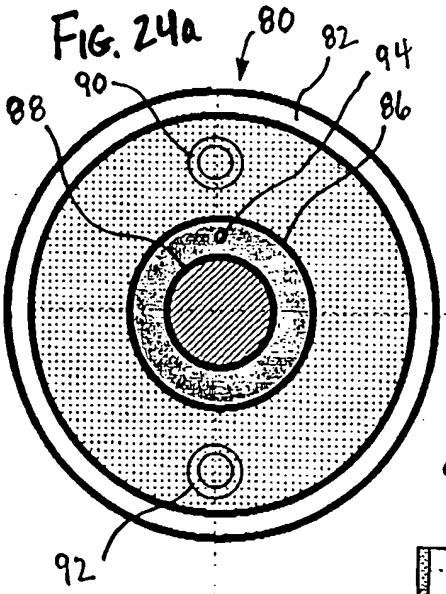


FIG. 24b

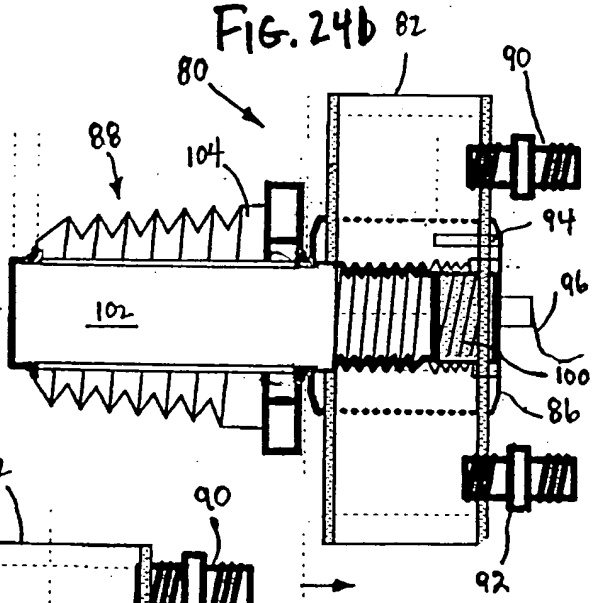
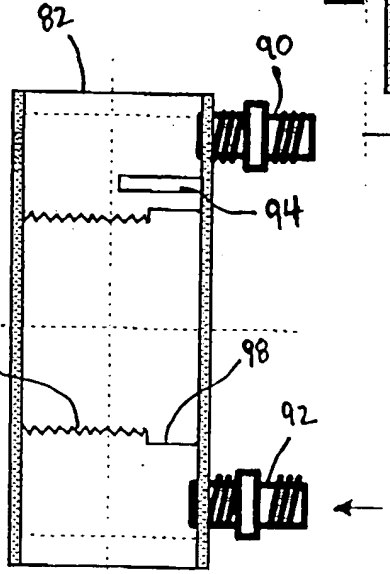


FIG. 24c



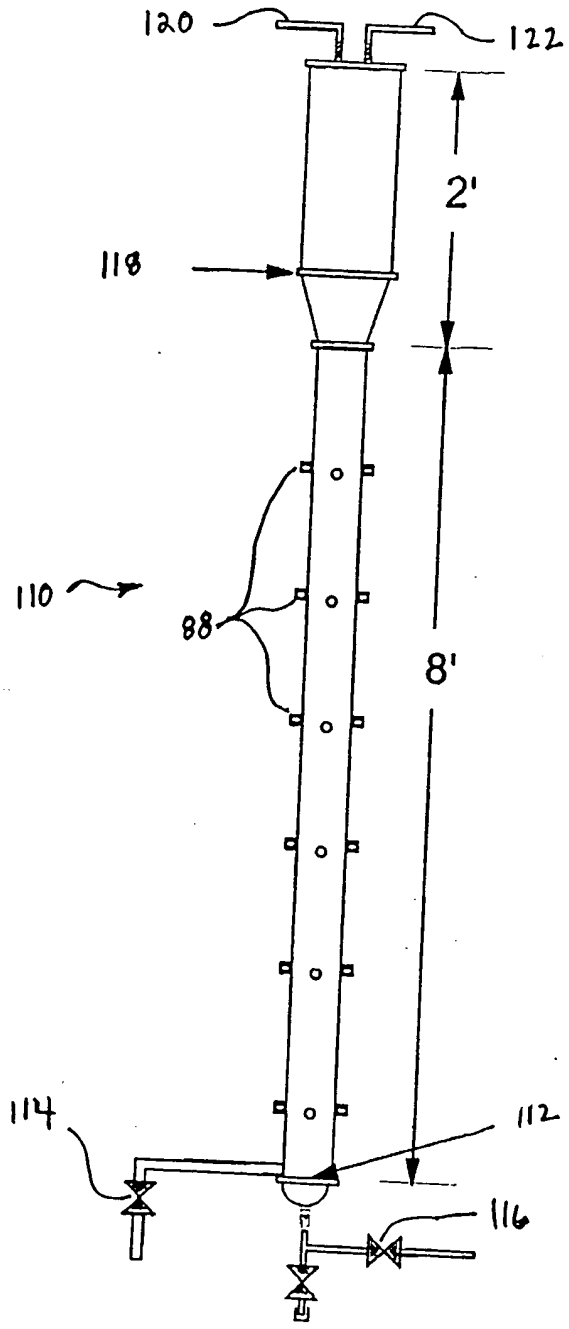


FIG. 25

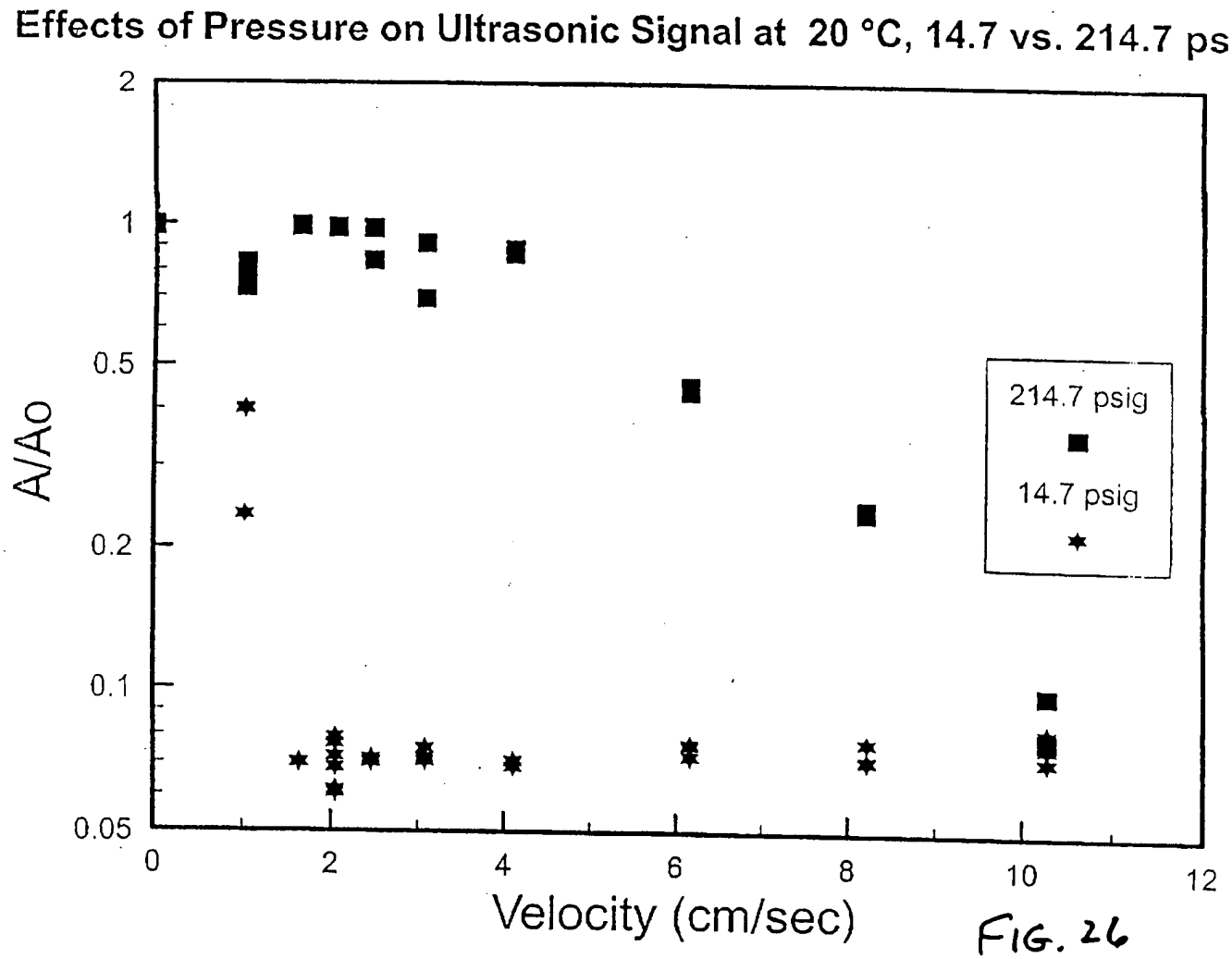

Effects of Pressure on Ultrasonic Signal at 20 °C, 14.7 vs. 214.7 psig
A/A0
2
1
0.5
0.2
0.1
0.05
0
2
4
6
8
10
12
Velocity (cm/sec)
214.7 psig
14.7 psig

FIG. 26